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Original Research

Knowledge, Attitude and Practices Toward Nutrition and Diet During Pregnancy Among Recently Delivered Women of Syrian Refugees

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Abstract

The aim of this study is to assess the nutrition situation in terms of knowledge, attitude and practices (KAP) among recently delivered Syrian refugee women and to identify nutrition related KAP problems of this vulnerable population. An analytical descriptive cross-sectional study was conducted on a non-randomized sample of one hundred recently delivered Syrian women from refugee background aged 18 years old and above who were admitted for delivery to the obstetric unit of a governmental hospital located in Beirut, Lebanon. The study reveals that fifty-six percent of the studied population was not knowledgeable about maternal nutrition during pregnancy, twenty-five percent had a negative attitude toward antenatal care (ANC) services and nutrition during pregnancy and forty-seven percent of the participants were having bad dietary practices during pregnancy. Knowledge, attitude and practices toward nutrition and diet during pregnancy are still lacking among this sensitive population.

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Introduction

Pregnancy is a crucial period in women's lives where they tend to experience many changes in their bodies. Pregnant women are exposed to physical, physiological and mental changes all along the pregnancy period (Perlen et al., 2013).

Increased needs for energy, macronutrients and micronutrients are required throughout the pregnancy period to provide the needed nutrients to the growing fetus and to ensure health and wellbeing of the mother. Women in developing countries are at risk of malnutrition and nutritional deficits during pregnancy resulting in negative pregnancy outcomes such as delay in fetal growth and development, pre-term delivery, low birth weight and maternal anemia (Conde-Agudelo et al., 2012).

Since the initiation of the Syrian war in 2011, Lebanon has been estimated to be hosting the largest number of Syrian refugees (Benage et al., 2015). According to the United Nations High Commissioner for Refugees (UNHCR), over 1 million Syrian refugees are distributed in different Lebanese areas (South Lebanon, North Lebanon, Bekaa and Beirut), Bekaa being the area of high density refugee settlement. Most Syrian refugees are living in crowded places (Masterson et al., 2014) with restricted resources. Several families can be living in the same rental apartments (Masterson et al., 2014), whereas some others are in tents on the street, deserted buildings, or sites with unfinished construction (Benage et al., 2015). This displaced population encounters many different challenges and obstacles preventing them from being in good health condition (Sami et al., 2014), such as poor hygiene, poverty and food insecurity (Masterson et al., 2014). Food insecurity has been common among recently delivered women of Syrian Refugees in Lebanon which is often caused by their displacement; they eat whatever is available irrespective of their food preferences and daily dietary requirements which may lead to inadequate nutrition (Masterson et al., 2014).

Furthermore, the forced displacement disrupts reproductive health and antenatal care (Hogan et al., 2010). This fact jeopardizes reproductive women and newborns' health. The Lebanese Ministry of Public Health (MOPH) in collaboration with United Nations (UN) agencies such as UNHCR and UN Population Fund (UNFPA) started to offer health care services for Syrian pregnant women in different Lebanese areas. According to the Syrian Refugee and Affected Host Population Health Access survey conducted in Lebanon in 2015, 86% of women who had given birth the past year delivered in Lebanon: 39.9% in public hospitals, 47.8% in private hospitals and 7.8% at home. As for antenatal care (ANC), 87% of Syrian pregnant women received it during their last pregnancy with an average of 6.1 visits. ANC was received in Primary Health centers (55%) and in private clinics (41%).

Despite all the health services provided to the vulnerable population, few Syrian women meet dietary requirements during pregnancy (Benage et al., 2015). In fact, limited data showed inadequate nutrition irrespective of ANC access among pregnant Syrian refugees. Consequently, there is a need for data on the food and nutrients intakes as well as on Syrian refugee women's knowledge and attitude toward nutrition and diet during pregnancy.

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The objective of this study is to assess the nutrition situation in terms of knowledge, attitude and practices (KAP) among recently delivered Syrian refugee women and to identify nutrition related KAP problems of the studied population.

Several hypotheses were identified as follows:

1. Nutritional knowledge is associated with maternal educational level, access to ANC services and newborn birth weight among Syrian refugees.
2. Women's attitude toward nutrition is related to maternal educational level, access to ANC services and newborn birth weight among Syrian refugees.
3. Dietary practice is associated with maternal educational level, access to ANC services and newborn birth weight among Syrian refugees.

Materials and Methods

An analytical descriptive cross-sectional study was conducted on 100 recently delivered Syrian women from a refugee background aged 18 years old and above to assess their knowledge, attitude and practices toward nutrition during pregnancy. Institutional Review Board (IRB) approval has been issued from the hospital to access the medical records of each Syrian pregnant woman admitted for delivery to the obstetric unit of Rafik Hariri University Hospital (RHUH), the largest governmental hospital located in Beirut, Lebanon. All women who were included in the study were interviewed after delivery and given a consent form to confirm their participation in the study; accordingly, a face to face questionnaire was filled. Data were collected for 2 months starting August 2016.

Questionnaire Design

The used questionnaire in this study was an adapted version of previously validated questionnaire (Marías et al., 2014), it tackled data on socio-demographic and medical characteristics, the context of pregnancy and prenatal care (Ibanez et al., 2015), pre-pregnancy weight, women's perception to nutrition importance and supplementation, women's attitude toward ANC and maternal and infant nutrition and mother's dietary practices. The questionnaire and the consent form were translated to Arabic language by an expert translator and verified by a gynecologist.

A quantitative approach was used to assess KAP toward nutrition and diet during pregnancy of the studied population. Knowledge questions consisted of 10 open ended questions requiring short answers from the participants. Attitude questions consisted of 6 questions which had three answer options showing one for positive attitude, one for uncertainty and the third for negative attitude. Practice questions consisted of 10 "yes-no" questions in addition to short food intake checklist. Indicators to quantify knowledge, attitude and practice were reported in terms of percentages and scores (Onyeneho & Subramanian, 2016; Liu et al., 2015; Sani & Siow, 2014; Popa et al., 2013; Khun et al., 2012).

Variables

Dependent variables: Knowledge, Attitudes and Practices of the studied population toward nutrition during pregnancy. Independent variables: Educational level, ANC visits, Newborn birth weight.

KAP Scores

Participants' answers to knowledge questions were given a score. One point was assigned for correct answers for all questions of nutritional knowledge, then the sum of correct answers was obtained (the sum of total scores for these questions ranged from zero to ten points maximum score) (Daba et al., 2013).

Participants' answers to attitude questions were given a score. One point was assigned for positive attitude for all attitude questions and zero point was assigned to both uncertain and negative attitude, then the sum was obtained (the sum of total scores for these questions ranged from zero to six points maximum score) (Daba et al., 2013).

Participants' answers to practice questions were given a score. One point was assigned for correct answers for all dietary practices questions KAP Scores, then the sum of correct answers was obtained (the sum of total scores for these questions ranged from zero to thirteen points maximum score) (Daba et al., 2013).

Statistical Analysis

The data entry and analyses were performed using the Statistical Package for the Social Sciences (SPSS) version 23.0. Means with standard deviation and percentages were used to describe continuous and categorical variables, respectively. Statistical bivariate analysis was performed. The Pearson chi-square ($\chi 2$) and Fisher exact tests were used to determine the associations. A p-value $< .05$ was considered statistically significant. A multivariate analysis using logistic regression was carried out with the practice score as the dependent variable. Independent variables were maternal education and attendance of ANC services. Adjusted odds ratios (OR) and their 95% confidence intervals (CI) were reported. The final logistic regression model was reached after ensuring the adequacy of the data using the Hosmer and Lemeshow test.

Results and Discussion

All 100 participants who fit the inclusion criteria agreed to participate in the study without any withdrawal (0% rejection rate). Almost all the participants originated from rural Syrian areas and had low educational level. Participants reported that they were living in a rental apartment (99%), were unemployed during their pregnancy (98%) and did not seek a job during that period, except for the 2% who had a full-time job to help with family income due to the fact that their husbands were unemployed. Full-time jobs of the pregnant women such as sewing of clothes were provided by Non-Governmental Organizations as stated by the participants. Most of the husbands were working a full-time job (85%); their salaries would cover the rental fee of the place they are living in. Their low socioeconomic status barely allowed them to meet basic living needs and contributed to the selection of non-nutritive food during pregnancy.

Nevertheless, 75.68% of the participants did not gain gestational weight as per recommendations where 55.41% gained less than the required and 20.27% gained more than the required. This result shows that more than half of the participants were not

aware of the appropriate weight gain during pregnancy (**Table 1,2**); this finding is in agreement with several other studies (Shulman & Kottke, 2016; Brown & Avery, 2012; McDonald et al., 2011).

Table 1 Participants' Characteristics

	Frequency (%)
Mother age (n=100)	
< 25 years old	25%
25- 34 years old	60%
35- 44 years old	15%
Accommodation ownership (n=100)	
Rental	99%
Personal	1%
Maternal employment during pregnancy (n=100)	
Unemployed	98%
Full time job	2%
Husband employment (n=100)	
Unemployed	4%
Part time job	11%
Full time job	85%
Maternal education (n=100)	
Illiterate	21%
Primary School	68%
Secondary School	8%
Higher	3%
Number of births (n= 100)	
Secundiparous	30%
Tertiparous	13%
Multiparous (≥ 4)	57%
Inter-pregnancy interval (with previous pregnancy) (n=100)	
< 6 months	8%
6-12 months	10%
> 1 year	82%
BMI Categories (n=74)	
Underweight (<18.5 Kg/m2)	5.40%
Normal weight (18.5- 25 Kg/m2)	55.40%
Overweight (25-30 Kg/m2)	20.30%
Obese (≥30 Kg/m2)	18.90%
Classification of total gestational weight gain based on recommendations (n=74)	
Not within recommended range based on pre-pregnancy BMI	75.68% (56/74)
Within recommended range based on pre-pregnancy BMI	24.32% (18/74)
Gained more than the required	20.27% (15/74)
Gained less than the required	55.41% (41/74)
CUTOFF Newborn birth weight (n=100)	
Less than 2500 gram	6%
≥ 2500 gram	94%
CUTOFF Hemoglobin level (n=100)	
Less than 11 g/dl	27%
≥ 11 g/dl	73%

Table 2 Obstetric History

	Mean± SD
Gestational age in weeks (n= 100)	38.71 ± 1.665
Newborn Birth weight in grams (n= 100)	3196.6± 513.489
Hemoglobin at the day of delivery in g/dl (n= 100)	11.8 ± 1.269

Table 3 ANC services

	Frequency(%)
Registration with UNHCR (n=100)	
Yes	99%
No	1%
Attendance of ANC (n=100)	
Yes	91%
No	9%
Number of prenatal care visits (n=83) Mean(SD)=4.90±2.052, MIN=1 MAX=9	
Less than 4 times	26.50%
≥ 4 times	73.50%
Iron supplement prescribed (n=98)	
Yes	99%
No	1%
Trimester of iron tablets prescription (n=97)	
First trimester	39.20%
Second trimester	42.30%
Third trimester	18.60%
Breastfeeding session provided in ANC (n= 98)	
Yes	49%
No	51%
Anemia self-reported (n=80)	
Anemic	57.50%
Not anemic	42.50%
When suffered from anemia? (n=46)	
Before getting pregnant	45.70%
First trimester	19.60%
Second trimester	13%
Third trimester	10.90%
Don't know	10.90%

With regard to ANC services (**Table 3**), 99% of the studied population was registered with UNHCR which allowed them to have free access to ANC clinics located in different Lebanese areas irrespective of their socioeconomic status. 91% of the participants had attended ANC clinics throughout their pregnancy with a minimum of one visit and a maximum of 9 visits. 73.5% visited the ANC clinics at least 4 times which is in line with United Nations Children's Fund (UNICEF) Sustainable Development Goals (2016-2030); those women fully benefited from services including renewal of iron supplements, laboratory tests, hygiene session, etc. The high rate of access to ANC clinics is related to many factors including participants UNHCR registration, ANC visits coverage, regional location of respondents and availability of health care providers in each region.

The mean Knowledge score (n=99) was 5.42 with a standard deviation (SD) of 2.28. 44% of the studied population was knowledgeable about maternal nutrition during pregnancy whereas the other 56% were not knowledgeable (**Table 4**). This implies that more than half of the participants had little knowledge about nutrition during pregnancy; in contrary to the finding of another study which was conducted on pregnant women in Ethiopia (Daba et al., 2013). This finding may be explained by the lack of exposure to nutrition-related topics during pregnancy and to the ignorance of the studied population toward the importance of diet during this phase.

Table 4 Participants' Nutritional Knowledge

	Frequency (%)
Causes of undernutrition (n=100)	
Not getting enough food	22%
Food does not contain enough nutrients	6%
Others (sickness, etc.)	7%
Don't know	65%
Important supplements to be used during pregnancy (n=100)	
Iron supplement	47%
Others (multi-vitamins, Calcium supplement)	7%
Don't know	46%
Identification of Anemia by participants (n= 99)	
Dizziness	41.40%
Low energy/weakness	20.20%
Paleness	17.20%
Others	7.10%
Don't know	14.10%
Identification of health risks when infants' diet lacks iron (n=100)	
Delay of mental and physical development	17%
Malnutrition	2%
Anemia	1%
Don't know	80%
Identification of health risks when pregnant women's diet lacks iron (n=100)	
Anemia	28%
General weakness	8%
Difficult delivery	2%
LBW	1%
Don't know	61%
Knowledge of participants about anemia preventive measures (n=100)	
Eat iron-rich foods	31%
Take iron supplements	8%
Others (disease/infection, avoid tea consumption)	12%
Don't know	49%
Knowledge about iron rich food (n=100)	
Heme iron food	15%
Non heme iron food	29%
Heme iron food & non heme iron food	20%
Don't know	36%
Knowledge about food enhancing iron absorption when taken with meals (n=100)	
Vitamin-C-rich foods, such as fresh citrus fruits (orange, lemons, etc.)	4%
Don't know	96%
Knowledge about beverages inhibiting iron absorption when taken with meals (n=100)	
Coffee, tea, Nescafé, carbonated beverages	53%
Don't know	47%
Knowledge score (n=99), Mean (SD)= 5.42 ± 2.28	
Less than mean Knowledge score	56%
≥ mean Knowledge score	44%
Source of nutritional information (n=100)	
ANC/ Doctors clinic	50%
TV/ Radio	10%
Neighbors/Family/ Friends	25%
School	8%
Others	1%
None	6%

The mean Attitude score (n=95) was 4.85 with a standard deviation of 0.99. 75% of the studied population had a positive attitude toward ANC services, maternal and infant nutrition whereas 25% had a negative attitude (**Table 5**). This finding can be promising for the future, especially that almost all participants (90%) found it crucial to seek ANC. Improving services in ANC, including nutrition counseling, may increase nutritional knowledge among this vulnerable population.

Table 5 Participants' Attitude

	Frequency (%)
Importance of seeking ANC during pregnancy (n=100)	
Positive attitude	90%
Uncertain attitude	1%
Negative attitude	9%
Skipping a main meal every day will not affect the pregnant woman's health (n=100)	
Positive attitude	68%
Uncertain attitude	5%
Negative attitude	27%
Preparing meals with iron-rich foods such as beef, chicken or fish (n=100)	
Positive attitude	74%
Uncertain attitude	12%
Negative attitude	14%
Use of iron supplement on daily basis during pregnancy (n=100)	
Positive attitude	62%
Uncertain attitude	1%
Negative attitude	37%
Confidence toward breastfeeding the newborn (n=100)	
Positive attitude	92%
Uncertain attitude	6%
Negative attitude	2%
Attitude score (n=95)	
Positive attitude	75%
Negative attitude	25%

Table 6 Participants' Practices

	Frequency (%)
Alcohol Consumption during pregnancy (n=100)	
Yes	0%
No	100%
Smoking during pregnancy (n=100)	
Yes	5%
No	95%
Daily use of iron supplementation (n=100)	
Yes	95%
No	5%
Consumption of animal products one day before admission (n=100)	
Yes	58%
No	42%
Consumption of dark green leafy vegetables one day before admission (n=100)	
Yes	13%
No	87%
More food consumed during pregnancy as compared to before getting pregnant (n=100)	
Yes	53%
No	47%
Daily Breakfast consumption(n=100)	
Yes	79%
No	21%
Daily Lunch consumption (n=100)	
Yes	80%
No	20%
Daily Dinner consumption (n=100)	
Yes	77%
No	23%
Add of citrus fruits to dark green leafy vegetables (n=100)	
Yes	79%
No	21%
Reason of adding citrus fruits to dark green leafy vegetables (n=80)	
Healthy	1.20%
Others (Like, better taste, culturally known)	98.80%
Coffee/tea consumption during pregnancy (n=100)	
Yes	81%
No	19%
Timing of Coffee/tea consumption during pregnancy (n=81)	
Two hours before or after a meal	21%
One hour before or after a meal	24.70%
During the meal	53.10%
Others	1.20%
Practice Score (n=81)	
Good dietary practices	53%
Bad dietary practices	47%

The mean Practice score (n=81) was 8.5 ± 1.07. 53% of the participants were identified as having good dietary practices and the other 47% were having bad dietary habits during pregnancy (**Table 6**).

Around half of the participants were not getting enough nutrients during pregnancy and were not following a diet specific to this phase; similar findings were noticed in the study of Ajantha et al. (2015). Some had actually inadequate energy, protein and iron intakes from food. This was mainly related to the lack of education, unavailability of all food sources at all times and to financial restriction which did not allow pregnant women to buy or prepare nutritive food.

There was no significant association between newborn weight (p= 0.8), attendance of ANC (p= 0.5), maternal education (p= 0.3) and the Knowledge score. Similar findings were observed in the literature regarding no association between nutritional knowledge and maternal educational level (Xu et al., 2016). The

observed non-significance can be related to social and cultural factors of the studied population.

There was no significant association between newborn weight (p= 0.3), attendance of ANC (p= 0.11), maternal education (p= 0.3) and the Attitude score. This shows that other predicting factors must be studied to have a better understanding of the factors that can influence women's attitude. Attitude may be related to women's intention irrespective of age, education and attendance of ANC.

A significant association was found between attendance of ANC (p= 0.01), maternal education (p= 0.04) and the Practice score. There was no significant association between newborn weight (p= 0.9) and the Practice score.
The Practice score was associated with maternal education (p= 0.03, OR 3.8 with 95% CI (1.2-12.5) and attendance of ANC services (p= 0.02, OR 12.25 with 95% CI (1.4 105.7).

Significant association between dietary practices and maternal education was also seen in the study of Saldiva et al. (2014). Regarding ANC, a healthcare professional can play an important role in influencing women's practices including compliance to diet and supplementation; similar findings have been noted in several other studies (Benage et al., 2015; Vosnacos & Pinchon, 2015; Popa et al., 2013).

Conclusion

Knowledge, attitude and practices toward nutrition and diet during pregnancy is still lacking among this sensitive population of Syrian Refugees' women.

Strategies targeting females can be initiated in schools; this will increase their knowledge toward good dietary practices as they grow to become women of childbearing age. As well, implementing effective nutritional programs and policies at ANC targeting pre-conception and conception period is essential and the need to standardize medical and nutritional practices among healthcare professionals in all available ANC is important to tackle in order to provide consistency of care as it was shown that the attendance of ANC services had an influence on dietary practices of pregnant women.

This study targeted a vulnerable population, specifically the pregnant women of Syrian Refugees in Lebanon. It identified the knowledge, attitude and practices toward nutrition of this particular high-risk population which is among few other published articles that has tackled attitude of high risk women.
However, this study had some limitations. It was a cross-sectional study with a small sample size covering one hospital setting located in the Beirut area, thus the results cannot be generalized. Women were interviewed after delivery; they were not followed up throughout the three trimesters. The retrieved 24-hour recall was not analyzed in terms of calories and dietary iron intake to know about the exact intakes, and it was taken for one day which does not represent the intakes over the whole pregnancy period. Information about pre-pregnancy weight was self-reported by participants which can increase bias.

Future highlights on multi-level qualitative and quantitative research may be helpful in understanding the determinants of nutritional knowledge, attitudes and dietary practices during pregnancy. The Syrian food culture has to be well studied in order to implement nutritional programs designed to this population. Nutrition counseling at ANC clinics has to suit Syrian dietary habits in order to improve their practices (Lindsay et al., 2014) as cultures differ from one country to another.

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